

Tewaukon, ND

Initial	Date
CU	2-10-87
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BA/WTR  
WR ND  
MAIL STOP 60190

FEB 10 1987

MEMORANDUM

To: ARD-Refuges and Wildlife, Region 6 (60130)  
Attn: Dale Henry

From: Regional Hydrologist, Division of Water Resources  
Region 6

Subject: Annual Water Management Plans

Plans have been reviewed and found to be in order for the following stations:

Arrowwood NWR/WMD  
Appert Lake NWR  
Canfield Lake NWR  
Chase Lake NWR  
Florence Lake NWR  
Halfway Lake NWR  
Hutchinson Lake NWR  
Johnson Lake NWR  
Lake George NWR  
Sibley Lake NWR  
Spring Water NWR  
Stoney Slough NWR  
Stutsman County WPA's  
Sunburst Lake NWR  
Tomahawk NWR  
Long Lake WMD  
Slade NWR  
Valley City WMD  
Fullers Lake WPA  
Hobart Lake NWR

J. Clark Salyer NWR/WMD  
Buffalo Lake NWR  
Cottonwood Lake NWR  
Holsten Slough WPA  
Lords Lake NWR  
Rabb Lake NWR  
School Section Lake NWR  
Willow Lake NWR  
Wintering River NWR

Audubon NWR/WMD  
Camp Lake NWR  
Hiddenwood NWR  
Lake Nettie NWR  
McLean NWR  
Lost Lake NWR  
Lake Ilo NWR  
Pretty Rock NWR  
Stewart Lake NWR  
White Lake NWR

*Shag Lake*

Des Lacs NWR/WMD  
 Shell Lake NWR  
 Lostwood NWR  
 Sikes WPA

Upper Souris NWR

Tewaukon NWR

Kulm WMD  
 Bone Hill NWR  
 Dakota Lake NWR  
 Maple River NWR

Devils Lake WMD  
 Billings Lake WPA  
 Brumba NWR  
 Hofstrand Lake WPA  
 Kelleys Slough  
 Lake Alice NWR  
 Lake Ardoch NWR  
 Lambs Lake NWR  
 Little Goose NWR  
 Pleasant Lake NWR  
 Rock Lake NWR  
 Rose Lake NWR  
 Silver Lake NWR  
 Snyder Lake NWR  
 Wood Lake NWR

A number of reports noted deteriorated dikes and spillways which require repair. Please remind station managers that any force account repairs which alter the type or elevation of water control structures may require State permit application. Water Resources should be advised sufficiently in advance of construction to secure permits if they are required.

The short form report is of more value if an estimate of water levels (i.e., pool was 3/4's full) is included if no gauges exist, rather than stating that water level is "unknown". The reports should also indicate if low water levels are the result of deteriorated facilities which are unable to retain the quantity of water allocated by the water right.

We appreciate the effort that went into preparation of these reports. Please extend our thanks to refuge personnel for their timely submission.

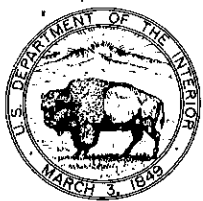
Attached is the original of the Upper Souris NWR report for return to the station, as requested by the manager.



Attachment

bcc: WTR rdg fl  
 Circ fl  
 RD

WTR:CWilliss:sc:2-10-87



# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
TEWAUKON NATIONAL WILDLIFE REFUGE  
RR #1, BOX 75  
CAYUGA, NORTH DAKOTA 58013



## MEMORANDUM

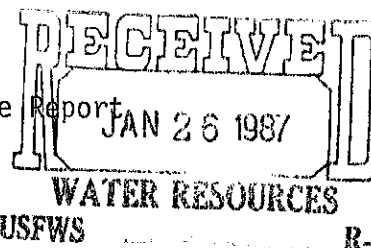
To: R&W, ND Refuge Supervisor (60130)  
Denver, CO

From: Asst. Refuge Manager, Tewaukon NWR (62660)  
Cayuga, ND

Subject: 1987 Annual Water Management Plan and 1986 Use Report

FILED  
JAN 12 1987

January 7, 1987



### 1. List of Water Rights

Tewaukon NWR #1261: 7,139 acre-feet yearly (4,852 storage and 2,287 seasonal use) for Lake Tewaukon (Pool 1) and Pools 2, 3, 4, 11 and 12 dated December 1964, diversion by dams across the Wild Rice River.

Declaration of Filing (#57) dated September 1, 1934 claimed 397 acre-feet storage and 312 acre-feet seasonal use for Clouds Lake (Pool 8) now called Hepi Lake. Listed on the same sheet as Lake Tewaukon/White Lake, as per RO(EN) Marshall Fox's 11-14-83 memo.

Tewaukon NWR #1262: 1,130 acre-feet yearly (635 acre-feet storage and 495 acre-feet seasonal use) for Sprague Lake, dated December 1964, diversion from an unnamed creek in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ , Section 2.

Tewaukon NWR #1263: 686 acre-feet yearly for Mann Lake (236 acre-feet) and Horseshoe Slough (450 acre-feet) dated December 1964, diversion from the Wild Rice River.

Tewaukon NWR #3816 Nickeson Tract: 571 acre-feet (474 acre-feet storage, 97 acre-feet annual use) for the Nickeson Bottoms, a tract jointly owned by the ND Game and Fish Department, US Bureau of Reclamation and USFWS. Diversion is from the Wild Rice River, W $\frac{1}{2}$  Section 27, T. 130 LTL N., R. 54 W. Priority date August 15, 1985.

### 2. Water Use - 1986

The four watersheds, Wild Rice River, Frenier Dam outlet, Sprague Lake Creek, and LaBelle Creek flowed above average this year exceeding management level in all wetlands. The Wild Rice River flowed all year which was very unusual. It is believed clean-out work on Sargent County Drain #11 may be partly responsible for the increased flow.

Natural wetlands were filled by the above average spring and summer rains. Most were holding good water at freeze-up.

Pool 1 (Lake Tewaukon): The lake was frozen good and high at 1147.26 (1148.0 is full pool and virtually never is attained in the fall after a summer of evaporation loss). Inflows began March 5 and it was taken up over-full to push water to several collateral wetlands. On April 14 it peaked at 1148.96 and many boards were pulled to bring it down to "full" pool.

Then the heavy rains and flooding hit and a peak of 1149.77 occurred May 1. High winds caused significant bank erosion at this time, especially the east shore. On November 14, the ice was broken out of the dam bays and the boards finally put in to hold the Lake for the winter at 1148.18 MSL. (Lake Tewaukon froze over about 2 weeks early on November 10.)

Parker Bay (east end of Lake Tewaukon): Again, this 95 acre marsh provided excellent waterfowl habitat. A beaver established a lodge in this pool. No water flowed in this year thanks to the heavy rains. Every effort was made to exclude carp so it was good that no water was needed. Maximum depth was 4 feet in the old channel and 3 feet in the center of the Bay.

Pool 2 (Cutler Marsh): This Pool started very low (below the gauge) but filled rapidly due to the flooding. It hit 1153.20 on April 21 and several nesting bales were lost. On June 3 it hit the desired level and was held at about 1151.5 by continually dumping water. To prepare for dike work, in late July all boards were pulled and this pool leveled out with Pool 1. It remained this way at freeze-up, 1148.18 MSL.

Pool 2A: Last year's work allowed about 6 inches more water to be held - which was excellent. However high winds caused waves to severely erode this new work so most of this new water was dumped to stop the damage. Several rat runs were dug out and packed closed and the erosion damage was filled in and re-riprapped. At freeze-up, the water depth was good. Excellent muskrat work was occurring toward opening the rank cattail stands.

Pool 3 (Maka Pool): This pool was frozen at about 1154.6 and began dumping water March 25. Flooding took it very high (1157.60) on April 22 - up to about 12-18 inches from over-topping. All boards were pulled in late July and the unit dried out nicely (last dewatering had been 1979). A Ducks Unlimited structure was built in the Nickeson Dike (north side of the pool) in September. The pool was in draw-down status all winter. ✓

Pool 3A: Thanks to the high water, this pool was very high. It came within inches of over-topping into Pool 3. Several muskrat runs began leaking so in late summer the pool was drawn down empty and repairs were accomplished (core trenching and packing, new culvert, dirt and riprap on west face). It froze up virtually empty. Hopefully some of the cattails mowed in December will be killed when this Pool is flooded.

Pool 4 (River Pool): It was frozen at 1160.7 and began dumping water March 24. By April 20 it had jumped to within 6 inches of being over-topped (1162.04 - estimated as the gauge ends at 1162.0). Seven more boards were pulled at that time and water was roaring through the six bays. It was unknown if the cement structure would survive if over-topped. Luckily the pool slowly began dropping.

Additional heavy rains early in May brought Pool 4 right back up to crisis level at 1162.15 - about 5 inches from over-topping. Many boards were pulled (flooding downstream pools) and the pool began dropping.

One board was pulled September 8 lowering the pool to 1155.9. At year's end water was still flowing over the boards

Pools 5, 5A, 6, 7, 7A: As usual all pools started very dry but rapidly filled full thanks to the heavy rains. Pool 5 was dewatered about 80% to inspect the structure - no work needed. Pool 5A, an interior dike inside Pool 5, worked perfectly holding excellent water in the rank cattails in the upper end of the pool. Pool 6 was drawn down dry in August and the old, rusted out structure was replaced. In December cattail mowing was accomplished in Pool 6 to form openings next spring. Pool 7 was held high to back as much water into the cattails as possible. Pool 7A held very little water and cannot really be considered a management pool.

Pool 8 (Hepi Lake): Heavy inflows overfilled this unit and a plug of dead cattails in the outlet structure made the problem worse. A maximum depth of about 7 feet deep (10.33 on the east gauge) occurred May 12. By June 16, it had dropped down to 2.7 feet, the desired depth. Cattails and bulrush continued to expand nicely into what had been 108 acres of open, wind swept lake. At freeze-up, good muskrat activity (lodge building) had occurred.

Pool 9: This small wetland north of Hepi Lake was again sacrificed to draw off Hepi Lake's high waters. It had to be greatly over-filled to do this and remained so all year. Probably 3-4 years of evaporation will be needed to get it low enough for cattails to reestablish themselves.

Pool 10: The small feeder ditch and control structure installed last year worked perfectly. For the first time in many years this pool had good water. ✓

Pool 11 (West White Lake): For the first time since at least 1979, this unit was full. Good inflows down a local ditch were supplemented by flowing in water from East White Lake. The unit hit 1150.4 on June 6. The cattail openings created by mowing the previous fall provided very good habitat. This was one of the best pools for waterfowl in 1986 (along with Parker Bay).

Pool 12 (East White Lake): For the past two years cattails have rapidly invaded this pool so high water was planned for 1986 to slow or stop their increase. The inlet structure was opened to gravity flow water in - until April 14 when it hit about 6.3 feet deep. However the flood came and, unknown to the crew, the inlet structure's boards were over-topped. Water poured into Pool 12 until being shut off April 21. Rains continued and a maximum depth of 8.4 feet occurred June 13.

Needless to say, the cattails were well underwater and controlled much more than desired. Surprisingly, about 10% of the cattail's later grew above the water - so in a few years cattails will again be strong. The amount of carp entering the pool this year no doubt was very large - future draw downs for winter kills will be necessary. (Note: on the informal gauge installed in 1985, a reading of "7.0" equates to a maximum depth of water of 2.8 feet.)

Pool 13 (Mann Lake): Again this year, this unit was kept closed off to increase edge vegetation. A good sedge, bulrush and cattail edge slowly increased this year. With the heavy rains, maximum depths were about 2½ feet this spring and 2 feet at freeze-up.

Pool 14 (Sprague Lake): This is a fishing lake. This spring it started at about 7 feet deep but heavy inflows and beaver damming the outlet caused it to jump to 11.1 feet deep. Good water was pushed into several wetlands including two new sloughs. But very severe bank erosion was the "other side of the coin". The outlet channel and the Wild Rice River accepted water only slowly due to beaver dams and not until November 27 was Sprague Lake down near "full pool" level at 2.09 on the informal gauge, 7.85 feet deep.

Pool 16 (Horseshoe Slough Group): Thanks to heavy flows in the Wild Rice River and improvements made in 1985 and 1986, water was gravity flowed to 100% fill this group of 8 wetlands, about 244 acres total. Pools C-East and C-South were flooded for the first time. All pools provided excellent waterfowl habitat and Canada geese are rapidly building a resident nesting flock (about 20 birds this year). Cattail and bulrush stands are rapidly increasing but so are the muskrats. The balance looked very good in 1986.

### 3. Impoundment Data

Please see the attached chart for capacities for each pool at various elevations. No formal inflow/outflow records were maintained. Please see Section #2 above for elevation changes for the various pools.

### 4. 1987 Plans

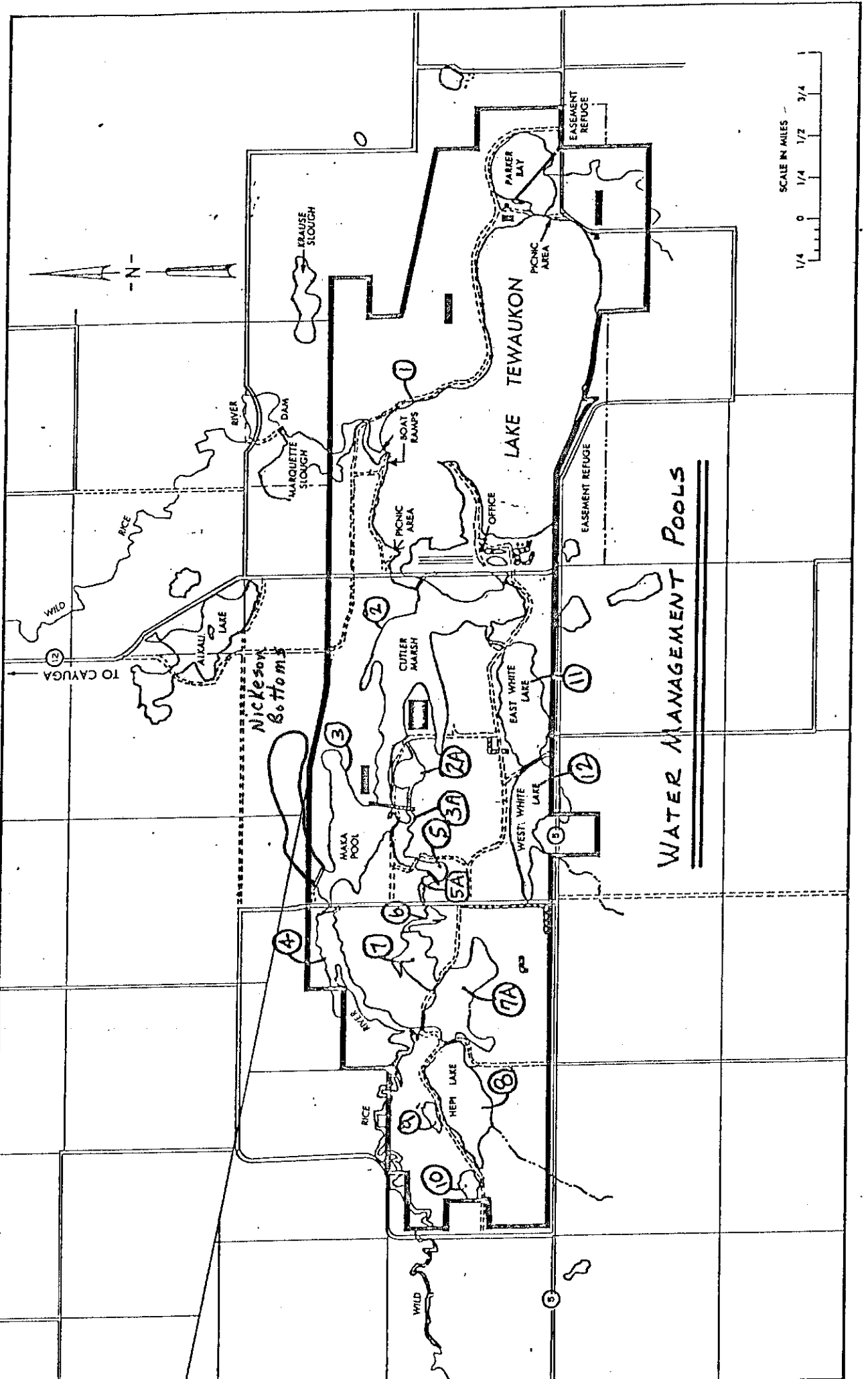
If 1987 is a dry year, we plan to hold all the water we can to maximize waterfowl production in each pool. If we get enough runoff we will attempt to manage the pools as follows:

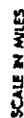
Pool 1 (Lake Tewaukon): Fill to about 1150.0 MSL for 2-5 days to flow water into adjacent wetlands on the Krause WPA, Tewaukon WMA, and the Refuge. Very little water should be needed because the wetlands held good water in 1986. After these wetlands have received adequate water, the lake will be lowered to the maximum management level of 1148.0 MSL for sport fishery habitat.

Parker Bay (east end of Lake Tewaukon): Add about 1 foot of water to reach a maximum depth of 4 feet early in the spring before duck nesting occurs. Maintain a 2½-3 foot depth for waterfowl production by adding water as needed in late spring and summer.

Pool 2 (Cutler Marsh): Fill the pool to 1151.5 MSL to flood dense cattails in the west end without killing vegetation in the lower end. When the water temperatures are correct small amounts of water will be released in June-August to help local sportsmen net carp. If DU funding for the interior dike becomes available the pool will be drawn down in the fall to about 1146.0 to allow dike construction.

# Tewaukon NWR





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TEWAUKON NATIONAL WILDLIFE REFUGE  
Pools, Elevations and Acres

<u>POOL</u>	<u>ELEVATION</u>	<u>ACRES</u>
Pool 1 - Tewaukon	1149	1015
Parker's Bay	1149	95
Pool 2 - Cutler's Marsh	1152	246
Pool 2A		30
Pool 3 - Maka Pool	1156	125
Pool 3A		18
Pool 4 - River Pool	1159	108
Pool 5	1160	6
Pool 5A		5
Pool 6	1165	6
Pool 7	1178	21
Pool 7A		106
Pool 8 - Hepi Lake	1179	106
Pool 9	1167	10
Pool 10	1173	5.5
Pool 11 - W. White Lake	1151	80
Pool 12 - E. White Lake	1147	103
Pool 13 - Mann Lake	1207	57
Pool 14 - Sprague Lake	1209	186
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Pool 16 - Horseshoe Slough		244
Pool 1	1210	119.7
Pool 2	1206	42.5
Pool 3	1206	10.3
Pool 4	1206	30.3+
Pool 5	1206	24.5
Pool 6	1206	2.8+
Pool 7	1206	14.5

Pool 3 (Maka Pool): Fill full to about 1156.2 and stabilize as quickly as possible before over-water duck nesting. If needed, supply water to Pools 2A and 3A. Supply water to Nickeson Bottoms as described in the next section. Hold water at maximum depth to slow cattail invasion.

Nickeson Bottoms: Flood to a depth of approximately 4 feet as quickly as possible to kill cattails mowed in 1986 but still minimize carp invasion. Maintain this depth to continue cattail control and encourage establishment of a muskrat population which will further aid in cattail control and whose lodges will provide waterfowl nesting and loafing sites.

Pool 4 (River Pool): Maintain at 1155.9 to retard cattail invasion and maintain muskrat populations.

Pools 2A,3A,5,5A,6,7,7A: If possible fill to maximum depth to flood cattails. If there is insufficient water, drawdown Pool 7 and add as much water as is available to Pools 5,5A and 6. Water from Pool 3 can be used to fill Pools 2A and 3A.

Pool 8 (Hepi Lake): Initially 5-6 feet of water may be needed to supply Pools 7A,7,6,5A,5,3A and 2A downstream. Draw the pool down to 4 feet as soon as possible to maintain cattail and bulrush stands.

Pool 9: If possible keep water out of this pool and allow it to dry up. Drying will allow some cattails to reestablish.

Pool 10: No water will be added to this pool. It held plenty of water in 1986 and there is a danger of flooding out the three square bulrush and creating a wetland choked with cattails.

Pool 11 (West White Lake): Maintain depth at 4-4½ feet to slow cattail invasion. If necessary pump water from Pool 12 into this pool.

Pool 12 (East White Lake): Add no water to this pool. Allow gradual drying to reestablish cattails. If necessary pump water into Pool 11.

Pool 13 (Mann Lake): Add no water to this pool. Keep it in draw down condition to eventually establish cattail or bulrush stands.

Pool 14 (Sprague Lake): Fill to maximum pool, about 8½ feet for sport fishery.

Pool 16 (Horseshoe Slough): Add no water to this pool. Continued high water may kill type III vegetation and encourage excessive cattail growth.

#### Hydrologic/Engineering Assistance

There are no known problems requiring assistance other than the on-going Dam Safety Work. Routine maintenance and repairs will be done force account where needed in 1987 on parts of the water management system.

January 7, 1987

5. Location Map

Please see Section #2 for the revised Refuge map on which all managment pools are marked.

*Gary Erickson*

Gary Erickson